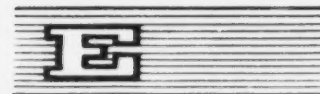




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STRATEGIES FOR LINKING EDUCATION/TRAINING INSTITUTIONS
WITH CENTRES OF SOCIO-ECONOMIC ACTIVITY AND
FOR MAXIMIZING RESOURCES UTILIZATION IN
INSTITUTIONS OF HIGHER LEARNING

LC/NAIROBI

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Introduction

After more than two decades of independence, African educational system still appear antiquated, inequitable and ill-functioning. They are certainly ill-equipped to solving the African socio-economic crisis; and as events tend to show, they continue to create inequalities between and within societies; perpetuate the rural-urban drift, continue to lead to waste and inefficiency of resources, and are failing to equip the young with knowledge skills and attitudes conducive to self-reliance, productivity and self-fulfilment.

In spite of the massive investment in education and particularly in all forms of tertiary education, evaluation and appraisal of educational systems in Africa lead to the conclusion that the outputs of the systems do not possess the right kind of skills, knowledge and attitudes to help solve African problems.

Criticisms of educational systems have been pronounced in many quarters and one can only restate them. Generally, African educational systems are being attacked because of: ^{1/}

- (i) the emergence of the problem of turning school leavers without vocational orientation; and therefore unable to find appropriate productive and socio-economic activities;
- (ii) the continuing rise in the number of unemployable university graduates and the rising tendency for them to pick jobs unrelated to their fields of education and training and requiring lower qualifications;
- (iii) the alienation of higher education products from communities and societies and the perpetuation of an elitist society;
- (iv) the increasing exodus of school leavers to towns and cities in search of white collar jobs/employment and dislike for blue-collar or manual work;
- (v) lack of greater opportunities for the gifted, mentally and physically handicapped youth where the systems are ill-equipped and ill-suited to respond to their special needs, thus nurture and develop whatever of the human resources is left;
- (vi) the educational systems inability to keep pace with more social demand for education and the limited educational opportunities available to youngsters;

^{1/} ECA: The Challenge of Education in the Socio-Economic Development of the African Region, Document ST/ECA/PAMM/HRP/7/81, August 1981 p.7.

- (vii) the general failure of education in achieving those individual competencies necessary to lead a successful and creative life for economic growth with the consequence that Africa continues to import expertise;
- (viii) educational experiences are too theoretical and classroom oriented, and are less practical and with less reference/relevance to the life around them;
- (ix) students have no opportunity to experience the utility of the world of learning in an immediate way; and
- (x) a lot of productive time capacity is foregone for too long when one has to study first then work later.

A closer look at these features indicates that they are bound to continue for the foreseeable future for a number of reasons. Among them are the unsuitability of the curricula to the socio-economic development problems; the neglect of vocational and technical education required in response to the needs of the economy; the emphasis attached to formal and general education at the expense of technical/vocational education, non-formal education; and the attendant quest for paper qualifications, the inappropriate teaching methods used by inadequately qualified and untrained teachers; and the terminal and dead-end nature of education at each of the tripartitions of the educational system. All these force many youngsters out of the educational system.

While these problems cut across the whole spectrum of the educational system, the analysis which follows is confined to third level education and training institutions. The strategies being proposed will be confined to possible linkage relationships between education/training institutions at third levels and the centres of socio-economic activities based on studies undertaken in some countries.

II. Studies on Maximizing Resources Utilization in African Institutions of Higher Learning

During the 1984-1985 biennium, studies were undertaken on maximizing resources utilization in African institutions of higher learning. These studies broadly:

- (a) reviewed existing resources utilization and higher education development plans of the respective countries the organization and operation of higher institutions so as to explore the possibility of increasing the intake within the existing facilities in relation to:
 - (i) the manpower supply and demand in priority sectors of the economy and
 - (ii) the fields of study and faculties amenable for the learn/work exposure;

- (b) made an assessment of the optimum utilization of resources in institutions of higher learning to determine instances of under-utilized resources: gaps of which could be filled thus, cater for increased intake, vocation-oriented and exposure as well as research and work-study programmes in the universities;
- (c) assessed the possibilities for planned development, increased utilization through linkage of teaching-learning activities with those of centres of socio-economic activities within the immediate environs of the institutions; and highlighted on:
 - (i) strategies in force or possible for maximizing the use of instructional and residential facilities in the course of the year,
 - (ii) the number of days when staff was not teaching and not actually engaged in research teaching work during the year;
 - (iii) the magnitude of disuse of resources (human and material) and related it to the need for increased intake for higher education, and the maximum number of students that can be fully engaged by a faculty/department at any one single intake;
 - (iv) number of students with minimum entry requirements but denied access to institutions of higher learning due to lack of instructional and residential facilities and suggested ways of programming them in a programme of residential cum non-residential cycle of the year (work/vocation exposure) to maximize the use of facilities and link teaching/learning to related work exposure;
 - (v) evaluation of courses offered, their relevance to socio-economic needs, their organization and inputs in terms of men, material equipment and time;
 - (vi) evaluation of curriculum so that education received was work/job-oriented and linked to the world of work to allow for practical work exposure and guidance and recommended an operational strategy of collaborative consultation between the institutional administration, academic staff and centres of economic and social activities;
 - (vii) institutional consultations to establish the modality for interchange of student resident and non-resident work exposure for increased higher education intake through the use of graduate assistants and tutorial fellows combined with distance teaching techniques.

- (d) The studies made recommendations on:
 - (i) resources required for increased intake to institutions of higher learning so that a good portion of the population has access to higher education;
 - (ii) identified sectors of the economy with critical manpower requirements so as to re-orient education and work exposure programmes to these critical areas;
 - (iii) operational strategies and modalities in respect of:
 - (a) higher educational orientation to economic needs including course offerings and instructional strategies;
 - (b) research oriented to socio-economic needs and production of goods and services;
 - (c) maximized use of staff, instructional and residential facilities;
 - (d) work-oriented education for learning while working or vice versa.

This paper is an attempt to propose strategies for the optimal utilization of resources in institutions of higher learning and for linking education/training institutional activities with industry and centres of socio-economic activity. It is not exhaustive because the problem is so vast.

III. Constraints in the Development and Utilization of Human Resources

Human resources development and in particular, education and training is an expensive undertaking which usually claims more than 4.5% of National GDP of African states. In spite of education and training being expensive, the demand for increased accessibility to educational and training opportunities continues to increase every year. African governments are being made to do with the existing physical facilities, staff and financial resources to meet the increasing demand for higher education and for more problem oriented research. The increase in demand for educational opportunities, has brought with it new problems such as that of outputs without the relevant knowledge and skills for national development.

Financial capital and recurrent expenditure inputs have become increasingly difficult and continue to be a major constraint. As a result, institutions of higher learning have been engaged in ways and means of utilizing their existing facilities, classrooms, lecture theatres, halls of residence, cafeterias, etc. and staff to meet the social demand for education. At the same time, institutions of higher learning are involved in finding ways and means of generating revenue for themselves. And most important has been the concern of such institutions to link their research and consultancy activities with industrial world and centres of socio-economic activities.

To do this requires a fresh thrust in the development of education and particularly at institutions of higher learning.

Given the foregoing analysis, it is possible to pose a few questions and perhaps elaborate on the same issues further:

- (a) that educational personnel or resources available in our society are not being fully utilized because of relying too much on one single resource - the teacher/instructor/lecturer to facilitate the acquisition of knowledge, skills and values. There is a general failure of combining the services of a conventionally trained teacher with those of other resources and agents of change in the society;
- (b) the rising costs of building, equipment and instructional materials continue to impose serious burden on national governments thereby putting a question on conventional approaches to the provision of education. A question may be asked as to whether the conventional three terms or two semesters a year are wanted in Africa to-day. Can the long vacation period be made use of so as to shorten on the period one takes to complete a degree/course. Perhaps the summer school ought to be institutionalized in most African countries.
- (c) A third aspect is the issue of utilizing local resources - human and material. To what extent can African countries rely upon local resources in the development of education itself e.g. the production of textbooks cheaply and save countries on foreign exchange; on building materials and the production of spare parts badly needed in many African countries for national development;
- (d) Given that institutions at whatever level are established for the service of society, is it not possible for universities and other higher education institutions to organize their educational activities for both the youth and adults around or closely associated with the centre of socio-economic activities such as a factory, a farm, a shop, clinic or whatever industry is near so that colleges/institutions can become partially self-financing in linking their educational activities to such centres of socio-economic activities;
- (e) A final issue relates to the question of reduction of external resources being used in African institutions - human and material. Africa is still heavily supported by external resources - finance and staff. Even the very industry one would like to link African institutions with may be heavily run and financed on multinational/transnational basis. The research one wants to conduct in an institution in collaboration with industry or centres of socio-economic activities may be to the benefit of foreign countries and companies. How are we to ensure that expatriate staff are not conducting research in collaboration with industry as spying devices for the benefit of western countries.

These questions of resources utilization and allocation to education and how best such resources should be utilized continue to be devil African states. The continent's problem in educational development is the lack of knowledge of what kind of educational actions would be effective in educational development and what strategies should be adopted to make them more effective. In this regard, therefore, there is need for innovative approaches to the development of education. More so if students/outputs of the system are to come out with relevant knowledge, skills attitudes and values. Thus the strategies being proposed hereunder reflect the concern and the direction one would like to see African education take.

What is being implied here is that Africa is capable of providing an education which is not only cost-effective, but an education that would give its society increased inventiveness and innovation; an education that would bring about a union or marriage between work and study and would combine knowledge with practice and production. In this way, the outputs of educational systems would be available for production services without too much recourse to pre-service training. To do this would require that our institutions of higher learning do not continue to be modelled on the linear expansion of colonial times but that there is a will (both political and moral) a determination and commitment to delve into our past and use it as a spring board for innovative actions for future developments.

We need to do this because many African countries have a number of qualified candidates for higher education but are often denied of access to institutions of higher learning because of the lack of instructional or residential facilities, the limited financial resources available for educational development, and the inability of African states to relate education to the demands of industry and other socio-economic activities.

Strategies for Innovative Forms of Educational Development

It is therefore being suggested that in order to deal with the demand for education by secondary school leavers, offer second chance education to those who are working and who left school for one reason or another, and to ensure that existing resources (human, financial and material) are fully utilized. African countries may wish to:

- (i) seriously examine the rate of utilization of existing facilities in institutions of higher learning and propose measures for their optimal utilization. It is being argued that at present, there is a lot of under-utilization of facilities in institutions of higher learning and we intend to show in the analysis which follows a little later, the rate of underutilization in some institutions;

- (ii) establish a link relationship between institutions of higher learning on the one hand and industries and centres of socio-economic activities on the other to ensure a practical and work oriented approach to education.

(i) Rate of Utilization of Facilities

It is being proposed that a number of institutions of higher learning are being under-utilized and could very well do with additional students. Much argument has been put forward by academic staff that they are overworked and that existing facilities are over-utilized, the staff over loaded with periods and have little time for research. Yet the examples we have here clearly show the rate of utilization to be very low.

- (a) Take the case of the University of Liberia which operates on a bi-semester system. The school year runs from mid-February or early March to mid-December with a break of 1 1/2 to 2 weeks in July separating the two semesters. Each semester is 16 weeks long, a total of 32 weeks for two semesters in a year -- including national and impromptu holidays. This means that only 32 weeks in a year are for teaching and examinations. If we allow four weeks for marking of scripts, we are left with 16 weeks of holidays for staff and 20 weeks of holidays for students. This means that 38.5% of student time is spent on holidays.

The official schedule of the University of Liberia is from 8:00 a.m. to 9:00 p.m. five days a week. This gives a total of 60 hours a week of teaching time, and a total of 960 hours per semester and 1920 hours a year. In reality, however, most classes operate from 8:00 a.m. to 4:00 p.m. five days a week i.e. 35 hours a week and 560 hours per semester and 1120 hours per year.

A first degree programme offered at the University requires a total of 4,400 hours of teaching and examination time, involving 4 academic years of 32 weeks each, and each week containing 35 hours. It should be emphasized that these calculations represent the actual situation at the University of Liberia of more than 80% of the academic activities and programmes. This analysis also shows that 41.7% of available hours for teaching and examinations is not utilized by the University of Liberia. It represents a total of 800 hours unused in a year and 3,200 hours in a four year programme. (See Table I below).

Table I: Available Time in the University of Liberia

Scheduled hours per week (5 days)	60 hours
Actual hours used per week	35 hours
Unused hours per week	25 hours
Scheduled hours per semester	960 hours
Used hours per semester	560 hours
Unused hours per semester	400 hours
Scheduled hours per year	1920 hours
Used hours per year	1120 hours
Unused hours per year	800 hours
Scheduled hours for 4 year course	7680 hours
Used hours for 4 year course	4480 hours
Unused total hours in 4 years	3200 hours
% hours unutilized in all cases	41.7%

From the above information it seems possible for the University of Liberia to reschedule its programmes in blocks of 12 weeks a semester and 24 weeks a year for one group of students, and another 24 weeks (12 weeks each semester) for a second group. The actual situation would work out as follows:

First Group:	1st Semester	12 week	March - May
	Break	3 days	
	2nd Semester	12 weeks	June - August
	Vacation	1 1/2 weeks	
Second Group:	1st Semester	12 weeks	Sept. - Nov.
	Break	3 days	
	2nd Semester	12 weeks	Dec. - February
	Vacation	1 1/2 weeks	

This proposal calls for 24 weeks of teaching and examinations for a first degree programme, but to obtain an optimal utilization of classrooms as the case is now, it will be necessary to increase the hours per day to 9 1/2 hours working from 8:00 a.m. to 7:00 p.m. in all colleges of the university and allowing 1 1/2 hours lunch break. This scheduling provides for 47 1/2 hours a week for classes and can be translated into 570 hours per semester and 1140 hours per academic year of 24 weeks. In a four year programme the time used for instruction and examination would be 4560 hours. If this rescheduling is

compared with Table I, it will be seen that time allocated for instruction and examinations is 570 hours per semester instead of 560; 1140 hours instead of 1120 hours a year and 4560 hours in four years instead of 4480 hours.

At present, the average teaching staff teaches 6 to 12 hours a week or 192 to 384 hours per academic year. Assuming that every staff were to teach 12 hours a week i.e. 384 hours a year on the basis of the present semester of 16 weeks, and that no increase were to be made to staffing establishment, the two group approach just proposed would increase teaching loads in the University of Liberia to 576 hours a year - assuming that a staff member teaches 12 hours a week in groups one and two of two semester each. Such a load is too much and unreasonable.

To offset this teaching imbalance, it would be necessary to increase staff establishment by 50% of the present strength and maintain that each staff teaches the standard 12 hours a week. This would bring down the staff teaching load from 576 hours a year to 384 hours a year.

In 1982, enrolment in the University of Liberia was 3,285 and was projected at 3953 in 1987. In 1983 an enrolment of 3,533 was recorded. In terms of costs for a two group intake with 24 weeks per academic year, the unit teaching costs would drop in spite of 50% increase in teaching staff. In actual terms, financing of two group of students in the University of Liberia poses a few problems.

First, the University is currently being under-financed without more students being brought in. Library facilities are not adequate and support services are seriously under-financed. Second, university policy has been since 1978 to decrease the number of teaching assistants and increase senior staff especially at professional level. This increase in senior staff would affect the costs of education especially unit costs. However, in spite of these problems, the cost implications of a 24 week academic year as opposed to the present 32 weeks a year would be as shown in Table 2.

Table 2: Comparative Cost Estimates for a 24 and 32 week Academic Years based on 1983 Costs

	<u>Normal 32 week per year</u>	<u>24 weeks per year (2 groups)</u>
Number of students	3,533	7,066
Number of staff	298	447
Ratio of students to staff	11:8	15:8
Direct teaching cost	\$2,295,202.00	\$3,442,803.00
Teaching support cost	1,601,378.00	2,402,067.00
Research	122,523.00	183,784.00
Library	199,750.00	239,625.00
Workshops	50,000.00	75,000.00
TOTAL ACADEMIC	4,268,853.00	6,405,279.00
Teaching cost per student	1,208.27	906.20
Personnel services	1,150,000.00	1,725,000.00
Other services	1,122,947.00	1,684,420.00
Materials, supplies & equipment	220,000.00	330,000.00
Subsidies	368,001.00	552,001.00
TOTAL ADMINISTRATION	2,860,948.00	4,291,421.00
TOTAL RECURRENT	7,129,801.00	10,694,700.00
GROSS COST PER STUDENT	2,018.08	1,513.54

Source: University of Liberia

It will be seen from the above table that the direct teaching costs per student in a 32 week academic year is \$1,208.27 as opposed to the 24 weeks academic year of \$906.20. The gross cost per student for a 24 week academic year would be 75% of the current gross cost per student i.e. US\$1,513.54 as against \$2,018.05 in Table 2.

- (b) A second case for illustration is the resources utilization in the University of Addis Ababa. The structure and operations of this University lend themselves to the under-utilization of resources. The University is complex and highly centralized with campuses

strewn over several provinces and separated by hundreds of miles. Centralization has tended to lead to under-utilization of instructional facilities. A second aspect is the rate of student attrition which also contributes to a lot of under-utilization of resources in a number of colleges, and faculties of science and technology. For instance, attrition rates for the University have been as follows:

Table 3: Rates of Student Attrition in Addis Ababa University

<u>Year</u>	<u>Total No. of Students</u>	<u>No. Dismissed</u>	<u>% Dismissed</u>
1979/80	11,183	579	5.4%
1980/81	10,968	348	7.7
1981/82	10,896	695	5.5

Source: Higher Education Commission

In spite of these constraints, a case can be made for increasing university enrolment and its intake. The normal working day of the University of Addis Ababa is from 8:00 a.m. to 4:00 p.m. Tuesdays through Fridays. On Mondays, it operates from 8:00 a.m. to 2:00 p.m. so that the rest of the day is left for ideological discussions; and on Saturdays it runs from 8:00 a.m. to 12 noon. Evening classes run from 5:00 p.m. to 8:00 p.m. daily - Monday through Friday. On the basis of this, the University takes 42 hours a week for day classes.

If the University of Addis Ababa were to run classes from 8:00 a.m. to 5:00 p.m. Monday through Friday, giving exceptions for only those lecturers involved in ideological discussions on Mondays, it could increase the hours per day to 9 hours and to a 49 hour week. This figure is much lower than the one of 60 hours a week for the University of Liberia. Addis Ababa University technically operates from 8:00 a.m. to 8:00 p.m. since evening classes which start from 5:00 to 8:00 p.m. every day Monday through Friday constitute a major activity of the University.

On the basis of 9 hours a day of room use Monday to Friday and 4 hours on Saturday, the potential and actual classroom utilization was calculated and tabulated in Table 4. This table gives a detailed room by room account of the number of hours each room is used in a day and throughout the week.

In the Institute of Language Studies and Faculty of Education (A in Table IV), none of classrooms 102 to 431 is used more than 7 hours a day. Only two or three classrooms appear to be effectively utilized - rooms 232 and 233. Room 232 is used 7 hours each Wednesdays and Fridays and Room 233 used 6 hours each day on Mondays, Wednesdays and Fridays. Many of the other rooms were used two or three hours a day leaving them idle for most of the day. The Social Science centre (B in Table IV) seems better utilized than the Institute of Language Studies. Quite a number of rooms are used for 6 hours a day and in particular Rooms 9-11; 9-12 and 9-17 are effectively utilized each day, averaging more than 60% of room use per day.

While many rooms in the Technology Centre (C in Table 4) are not used at all on many week days, those that are used are being effectively utilized. Of the total number of 24 rooms in this centre, (No. E118 to 320), fourteen of them are not at all fully utilized. This is more than 50% of the facilities available which are lying idle.

In the Science Faculty, the situation is slightly better, although here too the facilities are very much under-utilized. Rooms No. 242 and 244 are never used during the whole week, and Room 407 only once a week. On the other hand, the College of Agriculture (E in Table IV) has many rooms used at least 8 hours a day - a utilization rate of 88.9% per day. The two junior colleges of Awassa and Debre Zeit are not very much under-utilized. More use could be made of them especially Awassa College with a little more of students and if need be an increase of 50% of staff.

Table 4: Potential and Actual Classroom Utilization per Day
in Addis Ababa University (in hours)

REGULAR PROGRAMME

Institute of Language Studies and Faculty of Education Ist Semester 1981/82 (Room)	POTENTIAL HRS						ACTUAL HOURS					
	WEEK DAYS						WEEK DAYS					
	A	T	W	TH	F	S	M	T	W	TH	F	S
102	9	9	9	9	9	4	3	1	3	1	3	-
103	"	"	"	"	"	"	3	2	3	-	-	-
117	"	"	"	"	"	"	2	-	2	-	-	-
118	"	"	"	"	"	"	1	3	1	3	1	-
204	"	"	"	"	"	"	3	2	3	2	2	-
215	"	"	"	"	"	"	2	4	2	5	2	-
216	"	"	"	"	"	"	4	-	4	-	3	1
217	"	"	"	"	"	"	1	2	1	2	1	-
218	"	"	"	"	"	"	1	4	1	2	1	-
219	"	"	"	"	"	"	5	2	5	3	5	1
232	"	"	"	"	"	"	5	4	7	1	7	-
233	"	"	"	"	"	"	6	4	6	3	6	3
303	"	"	"	"	"	"	4	4	4	2	4	-
304	"	"	"	"	"	"	4	4	5	3	4	4
308	"	"	"	"	"	"	4	2	4	1	4	-
319	"	"	"	"	"	"	3	3	3	3	3	-
320	"	"	"	"	"	"	4	4	4	3	4	-
321	"	"	"	"	"	"	4	4	4	4	6	-
322	"	"	"	"	"	"	5	4	4	4	5	1
334	"	"	"	"	"	"	4	4	4	4	5	-
335	"	"	"	"	"	"	3	5	2	3	4	2
416	"	"	"	"	"	"	3	6	3	6	-	-
418	"	"	"	"	"	"	3	2	4	2	2	-
419	"	"	"	"	"	"	2	3	2	3	2	-
431	"	"	"	"	"	"	4	5	4	4	4	1

A

Table 4 (contd.)

B	Social Science Centre 1st Semester 1981/82 (Room)	POTENTIAL HOURS						ACTUAL HOURS					
		WEEK			DAYS			WEEK			DAYS		
		M	T	W	Th	F	S	M	T	W	Th	F	S
	101	9	9	9	9	9	4	4	5	4	3	4	1
	107	"	"	"	"	"	"	6	2	6	3	5	-
	108	"	"	"	"	"	"	4	5	4	3	4	-
	109	"	"	"	"	"	"	6	1	6	1	6	-
	110	"	"	"	"	"	"	4	3	4	6	4	-
	111	"	"	"	"	"	"	2	2	-	-	-	-
	112	"	"	"	"	"	"	2	3	2	2	2	-
	113	"	"	"	"	"	"	2	5	4	4	4	-
	114	"	"	"	"	"	"	2	3	2	2	2	-
	115	"	"	"	"	"	"	5	3	5	2	5	1
	116	"	"	"	"	"	"	7	7	6	-	6	1
	117	"	"	"	"	"	"	2	2	2	2	2	-
	118	"	"	"	"	"	"	3	2	2	2	2	-
	119	"	"	"	"	"	"	6	7	6	5	6	-
	120	"	"	"	"	"	"	3	1	5	3	3	-
	121	"	"	"	"	"	"	5	4	4	3	4	-
	122	"	"	"	"	"	"	6	2	6	3	6	-
	9 - 6	"	"	"	"	"	"	3	3	3	2	3	-
	9 - 7	"	"	"	"	"	"	3	3	4	6	4	-
	9 - 8	"	"	"	"	"	"	2	3	2	1	4	2
	9 - 9	"	"	"	"	"	"	1	4	2	1	2	2
	9 - 10	"	"	"	"	"	"	1	2	1	-	2	-
	9 - 11	"	"	"	"	"	"	5	5	5	7	5	-
	9 - 12	"	"	"	"	"	"	3	7	7	6	7	2
	9 - 13	"	"	"	"	"	"	"	3	3	4	3	-
	9 - 14	"	"	"	"	"	"	6	2	3	-	1	-
	9 - 15	"	"	"	"	"	"	1	2	1	-	-	-
	9 - 16	"	"	"	"	"	"	2	2	2	4	3	-
	9 - 17	"	"	"	"	"	"	6	5	8	8	7	2
	9 - 18	"	"	"	"	"	"	6	8	5	2	5	-
	9 - 19	"	"	"	"	"	"	4	5	2	3	2	1

Table 4 (contd.)

Technology Northern Campus 1st Semester 1982/83 (Room)	POTENTIAL HOURS						ACTUAL HOURS					
	WEEK DAYS						WEEK DAYS					
	M	T	W	TH	F	S	M	T	W	TH	F	S
E 118	9	9	9	9	9	4	2	-	1	-	-	2
E 121	..	..	..	..	..	..	4	7	7	7	6	-
E 122	..	..	..	..	..	..	-	-	-	-	-	-
E 131	..	..	..	..	..	..	5	6	6	6	7	-
E 132	..	..	..	..	..	..	-	-	-	-	-	-
PD 112-40	..	..	..	..	..	..	3	-	-	4	-	-
PD 108-40	..	..	..	..	..	..	3	-	-	-	4	-
PD 110-35	..	..	..	..	..	..	-	-	-	-	-	-
C 212-76	..	..	..	..	..	..	7	7	7	7	7	-
C 213-40	..	..	..	..	..	..	7	7	6	6	6	-
C 214-40	..	..	..	..	..	..	7	7	7	7	5	-
No. 4	..	..	..	..	..	..	-	-	-	-	-	2
C 215-60	..	..	..	..	..	..	5	4	5	6	6	-
C 224-60	..	..	..	..	..	..	-	-	-	-	-	-
C 206-96	..	..	..	..	..	..	3	4	6	6	3	-
CD 203-39	..	..	..	..	..	..	-	-	3	-	4	-
C 205-37	..	..	..	..	..	..	-	-	-	-	-	-
C 201-43	..	..	..	..	..	..	-	-	3	-	4	-
M 311-20	..	..	..	..	..	..	-	-	3	-	4	-
M 310-35	..	..	..	..	..	..	-	3	-	2	-	-
M 312-64	..	..	..	..	..	..	9	9	9	9	9	4
MP 321-40	..	..	..	..	..	..	-	-	-	-	-	-
MO 330-43	..	..	..	..	..	..	3	2	3	1	3	-
320	..	..	..	..	..	..	3	2	3	1	3	-

C

Table 4 (contd.)

D	Science Faculty Ist Semester 1982/83 (Room)	POTENTIAL HOURS						ACTUAL HOURS					
		WEEK			DAYS			WEEK			DAYS		
		M	T	W	TH	F	S	M	T	W	TH	F	S
	B 1/1	9	9	9	9	9	4	1	5	8	8	8	1
	B 1/2	"	"	"	"	"	"	4	7	7	5	7	-
	B 2/1	"	"	"	"	"	"	2	6	4	6	-	-
	B 2/2	"	"	"	"	"	"	4	7	7	7	7	-
	B 3/1	"	"	"	"	"	"	4	7	7	5	7	-
	B 3/2	"	"	"	"	"	"	5	1	3	4	7	-
	Hall 1	"	"	"	"	"	"	4	7	7	5	6	-
	" 2	"	"	"	"	"	"	4	4	4	3	4	-
	" 3	"	"	"	"	"	"	3	1	3	3	3	-
	" 4	"	"	"	"	"	"	4	4	4	2	5	-
	Room 201	"	"	"	"	"	"	4	8	4	5	4	-
	" 202	"	"	"	"	"	"	4	6	3	2	1	-
	" 203	"	"	"	"	"	"	4	6	1	2	-	-
	" 205	"	"	"	"	"	"	4	6	1	2	-	-
	" 207	"	"	"	"	"	"	7	4	1	2	-	-
	" 301	"	"	"	"	"	"	3	4	1	4	1	-
	" 302	"	"	"	"	"	"	3	5	1	1	-	-
	" 303	"	"	"	"	"	"	3	4	1	-	-	-
	" 305	"	"	"	"	"	"	3	1	2	3	2	-
	" 306	"	"	"	"	"	"	4	1	1	2	1	-
	" 307	"	"	"	"	"	"	4	3	4	2	4	-
	" 401	"	"	"	"	"	"	3	2	1	1	-	-
	" 242	-	-	-	-	-	-	-	-	-	-	-	-
	" 244	-	-	-	-	-	-	-	-	-	-	-	-
	" 402	"	"	"	"	"	"	3	2	-	2	-	-
	" 406	"	"	"	"	"	"	2	2	-	2	-	-
	" 407	"	"	"	"	"	"	1	-	-	-	-	-
	" 408	"	"	"	"	"	"	3	2	3	-	-	-
	" 409	"	"	"	"	"	"	5	-	1	-	-	-

Table 4 (contd.)

E	College of Agriculture 2nd Semester 1981/82 (Room)	POTENTIAL HOURS						ACTUAL HOURS					
		WEEK			DAYS			WEEK			DAYS		
		M	T	W	TH	F	S	M	T	W	TH	F	S
	I-7	9	9	9	9	9	4	8	8	8	8	8	6
	I-16	"	"	"	"	"	"	2	2	2	2	2	-
	I-19	"	"	"	"	"	"	8	5	8	5	8	-
	II-5	"	"	"	"	"	"	8	8	8	8	8	-
	II-6	"	"	"	"	"	"	8	8	8	8	8	-
	II-14	"	"	"	"	"	"	8	8	8	8	8	-
	II-15	"	"	"	"	"	"	8	8	8	8	8	-
	III-5	"	"	"	"	"	"	5	5	8	5	8	5
	III-10	"	"	"	"	"	"	8	5	8	5	8	-
	III-11	"	"	"	"	"	"	3	5	8	5	8	-
	LTH-1	"	"	"	"	"	"	8	5	8	5	8	-
	LTH-2	"	"	"	"	"	"	8	8	8	8	8	-
	ENG-1	"	"	"	"	"	"	5	5	5	5	5	-
	2	"	"	"	"	"	"	8	5	8	5	8	-
F	Awassa Junior College 2nd Semester 1981/82 (Room)	M	T	W	TH	F	S	M	T	W	TH	F	S
		9	9	9	9	9	4	2	4	4	4	3	-
		"	"	"	"	"	"	3	4	3	3	1	-
	1	"	"	"	"	"	"	-	2	3	1	2	-
	2	"	"	"	"	"	"	3	3	3	4	3	-
	3	"	"	"	"	"	"	4	4	4	4	3	-
	4	"	"	"	"	"	"	4	3	3	4	3	-
	Auditorium	"	"	"	"	"	"	3	3	3	2	1	-
	AET	"	"	"	"	"	"						
	HST	"	"	"	"	"	"						
G	D. Zeit Junior College 2nd Semester 1981/82 (Room)	M	T	W	TH	F	S	M	T	W	TH	F	S
		9	9	9	9	9	9	6	6	6	6	6	2
		"	"	"	"	"	"	6	6	6	6	6	2
	1	"	"	"	"	"	"	5	5	5	5	-	-
	2	"	"	"	"	"	"	4	5	4	5	-	-
	3	"	"	"	"	"	"	3	2	3	2	3	-
	4	"	"	"	"	"	"						
	5	"	"	"	"	"	"						

The rate of under-utilization shown in Table 4 becomes more pronounced when these figures are translated into percentages. For instance in the Faculty of Education, room 102 with a potential capacity of 49 hours a week is only used for 11 hours in a week i.e. a utilization rate of 22.90%. This room is not used for evening classes just as much as some other rooms such as 103, 117, 118 and 204 are not used for evening classes. All these have a utilization rate of 25% or less so that 75% or more of their hourly use is wasted each week.

In the same Faculty of Education (see Table 5(A) most of the rooms are better utilized for evening classes than for day programmes. In this Faculty only Room 232 gets a utilization rate of 50% in the week; and the rest have a rate of less than 50%. Yet in the evening, the classes have 55% or more utilization rate. It seems logical therefore to suggest that a third of the students can be put into the Faculty of Education without additional instructional facilities.

In the College of Agriculture, however, except for Room I-16, almost all rooms are used - 69% or above in a week. A good number are used for 81% of the time available. The situation is not as favourable in the two junior colleges of Awassa and Debre Zeit where the rate is less than 50% for most of the rooms. The three colleges offer no evening classes and therefore the rate of utilization is far less than the one shown in Table 5 (B) (C) and (D).

The under-utilization of facilities can be calculated to determine the potential capacity available in the University of Addis Ababa. For instance the Faculty of Education has a total capacity at present of 1949. If each of those facilities were to be fully utilized in a week i.e. 49 hours a week, a total capacity of 1949 times 49 is theoretically possible. But students are only required to take an average of 15 credit hours in a week. There is therefore a potential capacity of 1949×49 over 15 credit hours a week (Table VI). The analysis in this table reveals a lot of unused capacity in the University of Addis Ababa. For instance, in the Faculty of Education, it is possible to offer up to a maximum of 6,364 credit hours. Theoretically, the University of Addis Ababa can put in 6,364 students in the Faculty of Education; 708 students in the Faculty of Law; 3,658 in the College of Agriculture; 7,974 in the Science Faculty; and 4,874 students could join the freshman's programme. These are only theoretical figures but they tell a lot of the unused capacity of the University of Addis Ababa. In practice, however, it would not be possible to put into the University this number of students because of some of the bottlenecks which operate in the University.

Among these bottlenecks which would make optimal utilization of resources difficult are the limited dormitory/hostel facilities, libraries, laboratories and operational finance; and above all, human resources. At present, the University continues to experience a shortage of qualified academic staff, and an increase in student intake may put more strain on existing staff.

Table 5: Rate of Classroom Utilization for Regular and Evening Programmes in Addis Ababa University

A	Institute of Language Studies and Faculty of Education (Room)	Regular Programme (2nd Semester 1981/82)			Evening Programme (1st Semester 1982/83)		
		Potential hours per week	Actual hours per week	Rate of utilization	Potential hours per week	Actual hours per week	Rate of utilization
	102	49	11	22.90	27	-	-
	103	"	8	16.32	"	-	-
	117	"	4	8.16	"	-	-
	118	"	9	18.70	"	-	-
	204	"	12	25.0	"	-	-
	215	"	15	30.60	"	15	55.55
	216	"	12	25.0	"	18	66.66
	217	"	7	14.25	"	16.30	60.38
	218	"	9	18.70	"	18	66.66
	219	"	21	42.86	"	15	55.55
	232	"	24	50.0	"	18	66.66
	233	"	25	51.0	"	18	66.66
	303	"	18	37.50	"	15	55.55
	304	"	24	50.0	"	3	11.10
	308	"	15	30.60	"	3	11.10
	319	"	15	30.60	"	18	66.66
	320	"	19	33.70	"	15	55.55
	321	"	22	45.80	"	18	66.66
	322	"	23	49.0	"	10.30	38.00
	334	"	21	42.86	"	-	-
	335	"	19	38.70	"	3	11.10
	416	"	18	37.50	"	-	-
	418	"	13	26.50	"	-	-
	419	"	12	25.0	"	-	-
	431	"	22	45.80	"	7.30	27.00
B	College of Agriculture (Room)						
		Potential hours per week	Actual hours per week	Rate of utilization	Potential hours per week	Actual hours per week	Rate of utilization
	I-7	"	48	98.0	"	-	-
	I-16	"	10	20.40	"	-	-
	I-19	"	34	69.40	"	-	-
	II-5	"	40	81.60	"	-	-
	II-6	"	40	81.60	"	-	-
	II-15	"	40	81.60	"	-	-

Table 5 (contd.)

		College of Agriculture (Room)					
		III-10	49	34	69.40	-	-
		III-11	"	34	69.40	-	-
		III-13	"	34	69.40	-	-
		LTH-1	"	34	69.40	-	-
		LTH-2	"	40	81.60	-	-
		Eng-1	"	25	51.0	-	-
		Eng-2	"	34	69.40	-	-
C			Awassa Junior College (Room)				
		1	"	17	34.70	-	-
		2	"	14	28.55	-	-
		3	"	8	16.74	-	-
		4	"	16	33.46	-	-
		Aud.	"	19	38.72	-	-
		AET	"	20	40.80	-	-
		HST	"	12	24.50	-	-
D			Debre Zeit Junior Co. (Room)				
		1	"	32	66.96		
		2	"	32	66.96		
		3	"	20	40.80		
		4	"	22	45.00		
		5	"	13	26.53		

Table 6: Potential Capacity of Classrooms in Addis Ababa University1. Regular ProgrammeINSTITUTE OF LANGUAGE STUDIES AND FACULTY OF EDUCATION

Total Capacity	= 1949
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{1949 \times 49}{15}$	= 6364 students (credit hr. per week) <u>1/</u>

LAW FACULTY

Total Capacity	= 240
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{240 \times 49}{15}$	700

SOCIAL SCIENCE CENTRE

Total Capacity	= 1995
total periods per week Univ. in Session	= 49
average credit hours taken student per week	= 15
potential capacity of classes = $\frac{1995 \times 49}{15}$	6517

TECHNOLOGY (NORTHERN CAMPUS)

Total Capacity	= 1028
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{1028 \times 49}{18}$	= 2790

SCIENCE FACULTY

Total Capacity	= 2440
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{2440 \times 49}{15}$	= 7974

1/ HPM hours per week

Table 6 (Contd.)

FRESHMAN PROGRAMME

Total capacity	= 1492
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{1492 \times 49}{15}$	= 4874 students (credit hours per week)

TECHNOLOGY (SOUTHERN CAMPUS)

Total Capacity	= 273
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{273 \times 49}{15}$	= 892

SCHOOL OF PHARMACY

Total Capacity	= 674
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{674 \times 49}{15}$	= 2181

COLLEGE OF AGRICULTURE

Total Capacity	= 1120
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{1120 \times 49}{15}$	= 3653

AWASSA JUNIOR COLLEGE

Total Capacity	= 611
total periods per week Univ. in Session	= 49
average credit hours taken per student per week	= 15
potential capacity of classes = $\frac{611 \times 49}{15}$	= 1996

Teaching Load of Addis Ababa University

The University of Addis Ababa rules stipulate that academic staff should have a minimum teaching load of 12 periods of 50 minutes duration per week, three periods of which ought to be devoted to research. In addition, for each teaching period, a lecturer is expected to spend three hours in classroom related activities. The University also recognizes the fact that meaningful instruction cannot take place when the number of students a university staff teaches exceeds 75 per week in a freshman year and 45 in all subsequent years. A partial profile of staff teaching load is shown in Table 7.

Table 7: Staff Teaching Load of Addis Ababa University:
1st Semester 1981 (A Partial Profile)

<u>Department</u>	<u>No. of Periods Per Week Per Staff</u>	<u>No. of Students per Staff per week</u>
Biology	10	132
Chemistry	9	206
Geology	9	87
Mathematics	7	122
Physics	7	126
Statistics	7	149
Agri. Engineering	5	62
Agri. Economics	5	132
Animal Science	4	166
Plant Science	4	93
Arts and Science	4	207
Mechanical Engineering	8	69
Curriculum & Instruction	10	205

An examination of Table 7 reveals that all staff have a work load below the University's minimum of 12 periods a week. If an allowance is made for three periods devoted to research to be included in the weekly teaching loads, only the Departments of Biology and Curriculum and Instruction would have staff with a teaching load of 13 periods a week. The Departments of Chemistry and Geology would have a teaching load of 12 periods - the minimum allowed by the University. The rest of the departments in Table 7 have less than 12 periods a week. In effect therefore, staff in the University have a light load which falls short of the minimum required by the statutes. More significant is the fact that between 1974 and 1980, some 400 research

undertakings had been completed i.e. roughly 67 research completed each year which is not a lot if consideration is taken of the fact that a staff must devote three periods a week to research.

It sounds logical to conclude that academic staff can take in more teaching loads of at least two to three periods a week to meet the required minimum of 12 periods a week. It could also be argued that the three periods devoted to research should be reduced to two if not one, since interested staff can still do their research during the long vacation. On the basis of table 7, it can be proposed that teaching staff loads can be increased by 33.3% without unnecessary burden to the staff of the University, and since student facilities do exist, Addis Ababa University can technically increase its enrolment by say 40% with minimal cost increases.

In Table 7, the number of students per staff per week does not refer to say, a Biology class of 132 students; but refers to the total number of students the staff teaches in one week. These numbers were made up of various classes taught by each lecturer.

Linking Education/Study Programmes to the World of Work and Industry

In proposing a strategy for linking educational institutions to industry and centres of socio-economic activities, it is assumed that in a four year programme, students follow a general education programme during the first two years. A student wishing to pursue a bachelors degree in the sciences would therefore undertake a programme similar to the one here:

Major: Chemistry; Minor: Physics

Freshman Year

First Semester

<u>Course</u>	<u>Hours</u>
English	5
Foreign Language	3
Mathematics	4
Chemistry	4
Physics	3
Physical Education	1/2
General Sub.	1
Total Hours	18 1/2

Second Semester

<u>Course</u>	<u>Hours</u>
English	3
Foreign Lang.	3
Mathematics	4
Chemistry	4
Physics	3
Physical Education	1/2
General Sub.	1
Total Hours	18 1/2

Sophomore Year

<u>First Semester</u>		<u>Second Semester</u>	
English	3	English	3
Foreign Lang.	3	Foreign Lang.	3
Mathematics	4	Mathematics	4
Chemistry (1)	3	Chemistry (1)	3
Chemistry (2)	4	Chemistry (2)	4
Physics	1	Physics	1
Total Hours	18	Total Hours	18

Junior Year

<u>First Semester</u>		<u>Second Semester</u>	
Introduction to Lib St.	3	Introduction to Soc. Sci.	3
Philosophy	3	Physics	3
Physics	3	Chemistry (1)	4
Chemistry	4	Chemistry (2)	3
Elective	3	Mathematics	3
Total	16	Total	16

Senior Year

<u>First Semester</u>		<u>Second Semester</u>	
Biology	3	Biology	3
Chemistry (1)	4	Chemistry (1)	4
Chemistry (2)	4	Chemistry (2)	2
Chemistry (3)	3	Mathematics	3
Chemistry (4)	2	Elective	4
Total Hours	16	Total Hours	16

In the above proposals, students would delve into their major and minor areas of specialization during the third and fourth years of study. These proposals do not cater for students of Medicine whose programme would take a different form considering the practical element involved.

Some university programmes such as agriculture, teaching, law, and engineering require more practical work outside the confines of the University campus. In the strategy being proposed, it is being suggested that students should do their theory part of the programme in twenty four weeks and go on practical attachment for another twenty four weeks and the remaining four weeks of the year should be for holidays/vacation.

In order for the work programme to be effective, it must reinforce the students academic programme and relate it to the manpower development programme of the country. It is for this reason that each university will have to set a quota for the number of new students to be admitted in relation to the country's manpower needs. Some programmes would have to take in more students than others to reflect on the country's critical manpower requirements. The quotas would have to be reviewed periodically to ensure that the graduates from higher institutions are being absorbed by the job market in both the private and public sectors and that the manpower needs of the country are being met.

For this programme to work, there should be a board comprising of representatives from higher institutions, the Ministry of Education, Industry and other centres of socio-economic activities and the Ministry of Planning or the Ministry responsible for human resources planning, development and utilization. This board would have to ensure, through established machinery, that each student serves twenty four weeks of practical work at least twice before graduating.

During the first and second years of education, work attachment should be geared towards general societal issues or areas involving less specialization. In Africa where illiteracy is still very high and problems associated with poverty and under-development continue to plague the continent, students should be engaged in these areas for their work attachment. A major area of concern therefore would be to use students in the first and second years in literacy programmes would be able to instruct adults in such areas as farming techniques, child care, nutrition and insanitation.

In community work, students should help with improving refuse disposal methods, improving drinking water through the construction of wells and boreholes, construction of pit latrines, bridges across streams and improvement to pathways.

In general the work/study programme in which higher institutions can collaborate with the public, industry and centres of socio-economic activities would be concentrated in these areas:

1. Social and Community Work

Students to be attached to the Ministries of Labour, Local Government, Social/Welfare and Community Development; voluntary agencies, special institutions, relief and rehabilitation agencies, church organizations etc. Their work would include helping the aged and handicapped, delinquent children; community services, literacy classes, sanitation and other services.

2. Teaching and Other Social Services

Students should be attached to the Ministry of Education or any other ministry with responsibility of educational activities. Their work would involve teaching both the young and adults, teaching formal classes in primary or secondary schools; making teaching aid and equipment. They should also be engaged as research assistants at research institutions.

3. Business

Students should be attached to industry and other centres of socio-economic activity to work as assistants in business houses and establishments, shops, and warehouses. They could work as clearing clerks, accounts assistants and engaged in salesmanship of goods.

4. Scientific Work

Students of science should be attached to scientific and industrial concerns such as chemical, processing and petroleum plants as laboratory assistants, analysts; or be engaged in the treatment of water, or scientific experiments and surveys, and veterinary services.

5. Engineering

Students should be sent to the Ministries of Public Works; Land, Mines and Energy and Rural Development to help with rural development programmes, road building and construction; in surveys, mining geological work, designing and the development of solar energy for use by rural communities.

6. Agriculture

Students of agriculture should work as agricultural researchers; company technical assistants, and wood industry technical assistants. They should help with farming, plant pathology, poultry, veterinary services and agricultural production.

A point to be emphasized here for linking education to the world of work is that each group of students should complete a year's academic programme in six months instead of the traditional eight months of study. This proposal is not to be regarded as a sandwich course of study and work attachment but an innovative approach to normal repertoire of educational development.

The scheme would operate on the basis that while one group of students is in college, the other is on work attachment to industry and various centres of socio-economic activity. Two things are of paramount importance, viz:

First, the work-study programme require the full co-operation and collaboration of institutions, industry, the public and private sectors. Industry and other centres of socio-economic activities as to inject into the scheme some finance by way of allowances payable to students. Undoubtedly this would increase the operational costs of industries and the government, but this would be offset by the practical experience gained by students and the contributions made to industry by them.

A second aspect of the work-study programme is that the work element should be the subject of assessment and should form part of the overall assessment and should count in the final grade. Students should be made to write a report on their work attachment which should be assessed. To ensure that work attachment is done properly, students records should be well kept. In addition, there should be a team of supervisory staff made up senior industrial management, institutional, public and private staff - being representatives from sectors with a stake and interest in the work programme.

In practice, if we consider each course that operates a conventional three years of three terms or three years of two semester each, the course can be translated into two groups entry system by dividing the academic year into 4 terms of 12 weeks each as follows:

Group I: 1st Term
Study 12 weeks October-December
Break 3 days

2nd Term
Study 12 weeks January-March
Vacation 1 1/2 weeks

3rd Term
Work 12 weeks April-June
Vacation 1 1/2 weeks

Group II: 1st Term
Study 12 weeks April-June
Break 3 days

2nd Term

Study	12 weeks July-Sept.
Vacation	1 1/2 weeks

3rd Term

Work	12 weeks October-December
Break	3 days

4th Term

Work	12 weeks January-March
Vacation	1 1/2 weeks

If we assume that the academic session consists of 32 weeks with 35 hours a week of possible teaching time being available from Monday to Friday then a conventional three year degree programme takes $(2 \times 32 \times 35)$ hours in three years i.e. 3360 hours available for teaching and examining. In the proposal being made of 24 weeks a year of two terms of 12 weeks each, the hours could be extended to 50 hours a week i.e. 8:00 a.m. to 8:00 p.m. a day allowing 2 hours of lunch break. In a three year degree programme of two terms of 12 weeks each and fifty hours, the hours available for teaching and examining would be $(3 \text{ years} \times 2 \text{ terms} \times 12 \text{ weeks} \times 50 \text{ hours})$ 3600 hours in three years. In extending teaching hours to 50 hours a week, it does not mean that staff teach for 50 hours a week, but that facilities are available for instruction for ten hours a day.

If the 50 hours is considered too much, a lot could still be achieved in a 24 week academic year if the working day starts from 8:00 a.m. to 6:30 p.m. allowing for 1 1/2 hours of lunch break i.e. 45 hours a week for 5 days. This gives a total of 324 hours for teaching and examination which compares well with the conventional 3360 hours of 35 hours a week.

By having a year of 24 weeks made up of two terms of 12 weeks each, universities could admit two batches of students a year. This would overstretch the teaching staff and hence this system would call for an increase of at least 50% in staff establishment. This would allow teaching staff loads to remain favourably around 12 periods a week as is the case in most cases to-day.

Conclusion

In the foregoing analysis attempt has been made to highlight the problems of resources utilization in institutions of higher learning in Africa and how institutions could link their study programmes to the world of work. In particular attempt has been made on how institutions can utilize their existing facilities by allowing more students to come in and tie this increase in students with a work-study programme.

A major proposal has been that higher institutions can arrange their teaching programmes into two terms each of 12 weeks for a total academic year of 24 weeks instead of the conventional 32 weeks a year. This proposal also carries with it the suggestion that upon completion of the programme in 24 weeks, students should go on an attachment programme for another 24 weeks. The remaining 4 weeks in the year is to be used for vacation time. A second aspect has been that an admission of students into two batches will call for an increase of staff by 50% to ease the teaching load of staff.

Of greater significance to this proposal is the fact that pressure on the linear university expansion would be greatly eased. At the same time, the work-study programme would make education more job/work oriented to the needs of society and would give the students some practical experience very much needed at the end of their study course. Perhaps what is needed in this proposal is the will and commitment both institutions and industries to collaborate in educational innovation. For without the will and commitment, there can never be a start.